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Diffusion of a Social Movement – The Example of the German Local Exchange Systems

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Abstract: In the late 1980ies and early 90ies a new social movement – the local exchange systems – reached Germany. This initially Canadian movement draws attention to societal failures and wants to resolve them on a local level. They promote a sustainable and local economy and improve the conditions of living of underprivileged people. Whereas founding activity was rather retained in their first years a boom occurred in the mid 1990ies. Considering the success of this movement, we are interested in the circumstances causing their rapid diffusion. Focusing on the formative years of those systems we aim to analyze how they diffused across Germany. For explaining their process of diffusion we draw back on theories concerned with social networks and the effects of spatial and social proximity. Additionally we consider the impact of news media and the societal culture and incorporate theories of organizational ecology analyzing the effects of population density on the systems' founding rates. Using data for the period 1998 to 2005 we were able to prove that social contagion and news media were of considerable importance for the growth of the exchange systems. Furthermore the environmental and ecological assumptions are at least supported for West German exchange schemes.

Many grassroots organizations originate in Canada but only few of these movements manage to attract long lasting attention or gain supra-regional impact. One “bottom up” movement being able to establish across the Canadian borderline are the Local Exchange and Trading systems founded by Michael Linton.

Linton created his first modern exchange system in the early 1980s in Vancouver Island as a response to a deep economic regional depression (Hoeben 2003, p. 7; Pacione 1997, p. 1181, Seyfang 2002; Thorne 1996, p. 1361). By strengthening the local economy and rebuilding the community the system aimed to lower the dependence on the formal economy and to improve the peoples’ economic well-being. As soon as in 1984 Michael Linton introduced his idea of an informal exchange system at a convention¹ held in Great Britain. Initialized by Linton’s presentation the first British exchange system has been founded in Norwich already one year later. By the early 1990ies the systems have spread across most English-speaking industrialized nations (Lee 1996, p. 1379; Pacione 1998, p. 217; Williams 1995, p. 329; 1996a, p. 1400; 1996b, p. 87). Subsequently they started to expand in non-English speaking countries such as Denmark, Finland and Norway, France, Spain and Holland as well as Swiss and Germany either (Williams 1990, p. 1400). Apart from regional variations regarding currency forms, trading volume and membership profile all systems are structured similarly along the lines of their Canadian predecessor (Pacione 1998). Considering the worldwide success of these schemes we are interested in the circumstances causing their rapid diffusion. Focusing on the diffusion process of the German exchange systems we want to get a further insight in the conditions promoting their expansion. Therefore we will focus on the formative years of the systems and analyze how they diffused across Germany.

There are two lines of theory explaining processes of diffusion. Whereas the emphasize of innovation research lies on the importance of social networks (Coleman/Katz/Menzel 1957; Gould 1991; Hedström 1994; Hedström/Sandell/Stern 2000; Rogers 1995), organizational ecology concentrates on the tension of legitimation and competition in the process of diffusion of new organizational forms (Hannan/Carroll 1992; Hannan/Carroll 1998; Hannan/Freeman 1987). In our paper we focus on both lines of theory and try to combine central aspects of both theories in a fruitful way.

Our paper is structured as follows: First, we briefly describe history and background of the movement in Germany (section 1). Then we discuss theory and hypothesis concerning the process of diffusion of the systems in Germany (section 2). In the next section we describe our data set and present our sta-

¹ „The Other Economic Summit“ paralleled the G7 Economic Summit

tistical analysis (section 3 and 4) and finally we close with a discussion of essential insights and a brief outlook (section 5).

1. Local Exchange Systems in Germany: Origins and Background

Complementary economies have a long tradition in Europe. The first initiatives have already evolved in the 18th century and mainly pursued objectives of social reform. Those systems – like Robert Owen’s model of equitable labor exchange or Joseph Pierre Proudhon’s “banque du peuple” saw themselves as a response to the upcoming capitalism. They tried to overcome social inequality and fight poverty.

During the Great Depression in the 1930ies the local currency systems became more popular.² Especially the local currency program of the Austrian commune of Wörgl (Tirol) has to be mentioned. Drawing back on “working certificates” the commune wanted to create opportunities of public work for the unemployed, raise trading turnovers, and bring in outstanding taxes (Unterguggenberger 1983). With the help of the military government modified local currency systems were initiated in post war Germany to counteract the spreading of black markets and to overcome the shortage in supply.

In form of the Local Exchange and Trading Systems (LETS) the complementary economies experienced a renaissance in Germany in the late 1980ies and early 1990ies (Godschalk 1986; Kuhn 2002; Paysys 1997). The first German exchange system we found was built in the North Saxon medium-sized town Wolfenbüttel in 1988. This town is located about 60 kilometers east of Hannover and 12 kilometers south of Braunschweig and is seat of the Protestant regional church of Braunschweig. Thus it is not surprising that the regional church was involved in the founding of the first German exchange system. All three founders filled leading positions in the *Evangelische Familien Bildungsstätte* (church associated family center) funded by the church. This institution provided rooms for meetings as well as necessary infrastructure and it was engaged in establishing relevant contacts and recruiting new members either. The founding of the first exchange system was driven by a movie on complementary economies screened at this center. A certain proximity of German exchange systems to charity or church organizations still remains in their further development. Usually systems in English speaking countries can not draw back on such support, they are set up by individuals and run on a voluntary basis by community activists instead (Seyfang 2002, Williams

² Many of these projects rely on Silvio Gesell’s theory of “free money”. Silvio Gesell (1862-1930) traces the undesirable consequences of capitalism back to the functions of money. Money as a “storage” fosters hoarding of money and thus withholding it from circulation. According to Gesell, money should only function as a medium of exchange. He proposed a concept of “free money”. This money has an in-built rate of devaluation, i.e. the value would deteriorate periodically, and thus being uninteresting as an object of hoarding (Offe and Heinze 1990).

1996; S. 87). The example of the German local exchange systems reflects Germany's strong corporatist orientation once more.

In compliance with their orientation and objectives one may consider local exchange systems as a special type of social movement. Commonly social movements emerge out of a collective discontent with the current situation of living and the shared hope to achieve improvements by collective actions. Social movements may be seen as collective challenges to authorities in political and cultural domains struggling for a change in various domains of social life. They do not consist of single, self-contained actors, but of a collection of formal organizations, informal networks, and unaffiliated individuals (McAdam/McCarthy/Zald 1996; McAdam/Snow 1997; McCarthy/Zald 1977; Meyer/Whittier 1997; Snow 2004). Social movements can be defined as “networks of informal interactions between a plurality of individuals, groups or associations, engaged in a political or cultural conflict, on the basis of a shared collective identity” (Diani 1992, p. 13; 1994). They have a strong conflictual orientation to specific social and politic opponents and the movement's members are linked by shared identities (Diani/Bison 1994; Diani/Bison 2004, S. 282f). For gaining support and receiving perception the movement has to create an appropriate framing (Benford 1997, p. 415; Rao/Monin/Durand 2003). This framing helps to establish an own collective identity and enables the movement to define and communicate its interests and objectives to participants and the broader environment (Snow et al. 1986). The exchange systems' directive objective is to draw attention on social failures and to resolve them on a local level. The systems see themselves as countermovement to globalization and want to counteract its negative consequences. They promote a sustainable and local economy and improve the conditions of living of underprivileged people. Their collective identity manifests in a strong ideological orientation. Especially the first wave of initiatives emerged in a green-alternative milieu and pursued primary ideological rather than economical objectives. As a result an extremely skewed membership profile was given ending up in an “othering” of certain groups. People not sharing the system's ideological approach were made to feel excluded (Gran 1998; Williams 1996; 1997; 1998). The German exchange systems applied this ideological orientation either and recruited their members drawing back on this framing.

2. Diffusion of the Local Exchange Systems in Germany

Before a new social movement has become established it struggles to gain external support. The choice to support a new movement or to found a new movement organization tends to be highly ambiguous at this early point of time. The movements' success and likely consequences are difficult to assess (Hedström 1994,

p. 1163; Hedström/Sandell/Stern 2000, p. 151). Due to this uncertainty people are naturally cautious in approaching novelty but with increasing familiarity the perception of risk by an adopter decreases and his willingness to adopt increases (Greve 1998; Wejnert 2002, p. 303). Thus adoption processes typically have s-shaped curves: in the early phases the rate of adoption is rather low, then increasing rapidly until saturation levels out its growth (Hedström 1994, p. 1165; Coleman/Katz/Menzel 1966; Schenk 1987, p. 291; Rogers 1995, p. 272). The same pattern of diffusion seems to operate with the local exchange systems. Whereas formation activity in Germany was retained in the first years a turning point occurred in the middle of the 1990s and formations were booming (Kuhn 2002; Meier 2001; Täubner 2002). Since 2000, however, this trend gradually slowed down again. The number of exchange schemes increased from 7 systems in 1992 to about 200 systems in 2000 and in 2005 already 300 systems existed.³

DIFFUSION AND SOCIAL NETWORKS

Information plays a major role in the diffusion process increasing the apparent familiarity of a new idea and reducing uncertainty and the perceived risk. The spread of a social movement is primarily influenced by “relational” diffusion channels – e.g. movement organizations and social networks – and by news media (McAdam/Rucht 1993; Andrews/Biggs 2006). Communication and influence provide decisive information for an actor altering an adopter’s probability of adopting an innovation (Rogers 1995; Wejnert 2002: 297).

For reducing ambiguities in their choice situation individuals often base their decision on actual past behavior of other actors. Thus the decision to found a new movement organization is just as likely to be influenced by the past behavior of others close to the individual (Granovetter 1978; Land/Dean/Blau 1991, p. 241). Past behavior of other actors to whom the individual is connected may provide valuable signals for an individual’s own decision. Persons having already joined a social movement have access to privileged information not available for outsiders. Prior decisions of other actors provide information about the likely costs and benefits of joining. Learning through such observations lowers the perceived risk of adoption by eliminating novelty and uncertainty. It enables individuals to better assess the long-term consequences. Therefore imitation is a highly rational strategy of decision making when the relationship between means and

³ These results originate from an own survey of all German exchange systems. Other sources display slightly different results (Meier 2001; Paysys 1997; Täubner 2000). The deviation is firstly explained by difficulties in gaining field access – there is no compulsory registration and no official address register updated by a central coordination system either and it secondly results in the restricted use of information of the other studies. These studies relied on data of the Tauschringarchiv only.

ends is difficult to assess (Hedström 1994, p. 1162; Hedström/Sandell/Stern 2000, p. 150f; Galaskiewicz/Burt 1991; Tarde 1903). According to this rationality the adoption of some actors has a cumulative effect on the adoption decision of other individuals in a social network and adoption may be seen as a network-based decision (Blau/Land/Rekking 1992; Coleman/Katz/Menzel 1966; Wejnert 2002, p. 306).

For this contagious process spatial and social proximity (distance) is of great importance. Especially dense knit groups ensure a quick flow of information and ideas as proximity positively affects the frequency of communication and the nature of interaction among actors (Coleman 1988; 1990; Raub/Weesie 1990). If network relations are not mapped directly, proximity enhances the likelihood of mutual awareness and interdependence. The closer two actors are the more likely they are to interact and influence each other (Hedström 1994, p. 1163; Strang/Soule 1998, p. 275). The more densely packed a population is in a certain (social or geographic) space, the more dense the existing social network ties are and the faster information about the innovation is likely to diffuse. Thus imitative behavior is facilitated by spatial and social proximity to a great extent as local influence becomes possible (Hägerstrand 1967, p. 165f; Hedström 1994, p. 1165ff; Rogers 1995; Wejnert 2002, p. 311). Numerous findings of social movement research confirm this line of argumentation. Various studies concerned with recruitment strategies indicate that religious groups as well as political movements primarily attract new members through pre-existing personal contacts to members and a spatial proximity of actors. New members of a local abstinence movement were also attracted by being linked to a member through an extra-movement interpersonal tie. Recruitment among social networks seems to be very productive for social movement's participation. Thus social networks hold an important bridging function in respect to movement recruitment (Land/Dean/Blau 1991, p. 247; Snow/Zurcher/Ekland-Olson 1980, p. 791f.; Sandell/Stern 1998). However, social and spatial networks may not only influence the decision to join an existing movement organization, but also promote the founding of a new movement organization. As studies point out contagious processes stimulated the growth of the Swedish Social Democratic Party and the Swedish Trade Unions (Hedström 1994; Hedström/Sandell/Stern 2001). Even the diffusion of tax innovations is promoted by mimicking behavior, i.e. jurisdictions copy each other's tax policies. Neighboring states having previously (or recently) adopted a new tax provide relevant signals concerning the success of the innovation; alleviate uncertainty and reduce political costs of adoption (Ashworth/Geys/Heyndels 2006, p. 6, 14; Berry/Berry 1992, p. 722; 737).

The formation of the local exchange systems in Germany was accompanied with a high degree of uncertainty either. When founding the first systems, success and consequences of the movement were difficult to predict. It was impossible to assess whether the systems were congruent with the German culture, the way of life and the belief-systems. Additionally the social costs of these exchange systems were unknown when introducing them. Neither their acceptance in social and labor policy nor their congruence with regulations concerning illicit work was clear. To lower the risk of adoption actors intending to found a new exchange system will probably refer to “peers” or “neighbors” having already joined the movement. Thus the diffusion of the local exchange systems will also be based on imitation and effects of social/spatial contagion. This argumentation yields our first hypothesis, *that the formation of a local exchange system is more likely if neighboring districts have already introduced such a system.*

As the system’s familiarity is increased with the process of diffusion as more information concerned with the movement’s costs and success are available and the choice situation becomes less ambiguous the effects of social contagion should decline with the passage of time. These thoughts lead us to the following hypothesis, *that the positive effect of social and spatial proximity of other exchange schemes (neighbors) on an exchange system’s formation is likely to decline gradually.*

An alternative channel of diffusion is the news media. They are major channels communicating the innovation to a broad audience disseminating relevant information to potential adopters directly (Rogers/Shoemaker 1971). Their primary task is to draw attention to the innovation and to promote its publicity. Especially the diffusion of innovations with public interest diffusing in loosely connected, large organizational networks may be promoted by news media predominantly (Oberschall 1989; Wejnart 2002). Positive reporting about a movement may convince actors to found a social movement organization themselves. Some studies illustrated that mass media have a significant impact on the diffusion of protest movements and support the role of institutionalization (Andrews/Biggs 2006; Koopmans/Olzak 2004; Wejnert 2002). As the exchange systems are concerned with issues of societal well-being either and result in public consequences their growth should also be positively influenced by the media. Our hypothesis concerned with diffusion channels thus is, *that the diffusion of the exchange systems is promoted by newspaper reports dealing with the exchange schemes.*

SOCIETAL CULTURE; IDEOLOGY AND DIFFUSION

The adoption of innovations is strongly influenced by culture, societal values, norms and the belief systems. When an innovation conflicts with the cultural mores or is discordant with local customs, traditions or the dominating ideology it is less likely to be adopted. Such incongruence increases the costs of adoption as the perceived risk of societal disapproval is very high (Weijnert 2002). System's norms can even be a barrier to change as in the case of water boiling in a Peruvian community (Rogers 1995). On the other hand an innovation being consistent with the cultural values influences the diffusion positively as risk perception is lowered. A societal fit with dominant cultural values and norms is important for the diffusion of an innovation because innovations fitting in societal cultural values are perceived as being less risky in terms of disapproval and manage their breakthrough more easily (Herbig/Miller 1991; 1992; Rogers 1995, p. 241ff.). Thus a cultural similarity of the movement with its endowment promotes its diffusion either. Studying the diffusion of shantytown protests Sarah Soule found out, that the protests diffused between similar kinds of campuses rather than neighboring regions (Soule 1997). The exchange systems chose a strong ideological approach towards the green-alternative milieu for their framing. Primarily they pursue ideological rather than economical objectives. Thus a green-ideological orientation of the region will play an important part for the formation of an exchange system. When the district's orientation is congruent with the systems' framing the perception of risk of adopting the movement is reduced and the willingness to adopt is higher. We therefore assume *that an environmental and socio-critical attitude of the region influences the systems' formation positively.*

DENSITY-DEPENDENCE IN THE DIFFUSION PROCESS

Another stream of research – the ecological theory – focuses on the density dependence of newly founded organizational forms. Following this theory the formation of a new organization is directly associated with its population density, defined as the number of population members or organizations. The density dependence theory postulates that organizations belonging to the same population are linked to each other through processes of competition and legitimation (Freeman/Audia 2006, p. 154; Hannan 1986; Hannan/Freeman 1989; Hannan/Carroll 1992). Whereas legitimation enhances the organizational founding rates, competition has mirror-image effects (Carroll/Khessina 2005, p. 462).

For spreading and long-term sustainability a new organization depends on resources from its endowment. However organizations only get access to these resources if they have already gained legitimation.

Relevant actors must regard the organization as the “natural” way of performing some kind of collective action. But a new organizational form attains this taken-for-granted character with a distinct population size only. If numbers are small, every entity must fight for its legitimacy – it must argue for the special purposes and the design of the new form and it can hardly be taken as the natural way to achieve some collective end. Thus new organizational forms diffuse very slowly after their first launching. Although plenty resources are available and there is no competition for limited resources only few population members exist as a newly founded organizational form has to gain social acceptance first. Every organization entering helps to increase the organizational form’s legitimacy. As soon as a new organization has become institutionalized the need for elaborating justifications diminishes and founding rates increase. Entering organizations now can rely on the legitimacy of their existing population members. Increases in numbers have no great effect on the organizational form’s institutional standing anymore (Hannan/Carroll 1989, p. 42; Hannan/Freeman 1992, p. 132; Windzio 2003, p. 4). At this point of time higher density raises competition only. The carrying capacity of a niche narrows the more members of a population exist and competition for scarce resources increases. Now newly entering organizations can draw back on far less resources for their founding. Therefore the founding rate declines with the number of organizations in the population as increasing saturation effects restrain the further spreading of the population. (Hannan/Carroll 1992, p. 42f; Hannan/Freeman 1992, p. 132f; Windzio 2003, p. 4).

Thus founding rates should show an inverted u-shaped relationship with population density. At lower densities of population development a growth in density positively influences the founding rate as legitimation is increased. However at some level of density the relationship changes its sign and the competition process dominates (Carroll/Khessina 2005, p. 462; Hannan/Freeman 1989, p. 132f; Hannan/Carroll 1992; p. 44). Two conflicting processes are operating: the positive effect of legitimation is opposed by the effect of competition. We suppose that saturation tendencies with increasing population density also emerge with the local exchange systems. To guarantee a broad range of supply the exchange systems need a minimum of persons participating. Thus the society’s carrying capacity for the exchange systems will be restricted and their growth will be limited by natural barriers. Our ecological hypothesis therefore sounds, *that the founding rate of local exchange systems is negatively related to their density dependence.*

3. Data and Methods

For testing our hypothesis not only relevant longitudinal data on individuals ever formed an exchange system but also additional information on their relationships to all other individuals in the relevant population at different points of time are required. As we can not draw back on these data we focus on the founding of the first exchange scheme in different geographic areas instead. This approach enables us to examine our hypothesis concerned with social contagion and density dependence of organizational forms empirically.

Relevant data were obtained by a standardized telephone survey conducted with coordinators of all German exchange systems. As there is no compulsory registration – as with businesses – and only few of the systems are organized as registered associations it is difficult to assess the total population of exchange systems (Meier 2001). Even the systems themselves have no central clearing association registering the systems. Thus no official address register of the exchange schemes exists. However, some activists of the movement independently undertook the effort to register all German exchange systems. We found six such lists⁴ of various quality and actuality. Merging and adjusting these lists we generated a new register serving as base for our survey.⁵ To sketch our population more precisely and identify exchange systems not termed in the lists we used a nomination technique. At the end of each interview we asked coordinators to report about nearby exchange systems familiar to them (Diekmann 1998; Gabler 1992). Having found 429 exchange schemes our approach should map the German exchange systems' landscape almost completely.

We were able to realize a response rate of 73.7% and the rate of cooperation was very high with only 1.4% denying taking part in our survey. The remaining failures (24.9%) are due to the address lists being not up to date.⁶ Finally our data set entails information of 316 German exchange systems and we have information about the systems' names, regions and their date of birth (and of its death if needed) for the period from 1988 to 2005. To control the influence of news media we looked into archives of nationwide German

⁴ <http://www.tauschring-archiv.de>, <http://www.tauschringportal.de>, <http://www.tauschringadressen.de>, <http://www.tauschring.de/d0402add.htm>, <http://www.lets-linkup.com/>, <http://www.tauschkreise.de>

⁵ This matched register entails every exchange system listed at least in one list. Obvious duplets were removed.

⁶ 2.1% of the exchange systems have never been operative at work and in 22.8% of the listed systems we were not able to find address although undertaking intense investigations.

newspapers and weekly journals for articles concerned with the topic of local exchange systems published within the observation period.⁷

The unit of analysis used in our study is an administrative district called *Landkreis*. For each of these 439 units we have information about the number of existing systems per year for the observation period. Additionally we are able to derive information about the number of exchange systems in neighboring districts and the size of the exchange systems' population from these information on an annual basis. We also included data of the German statistical bureau to account for regional distinctions of the districts. For testing our hypothesis focusing on the role of a district's ideological orientation we used the percentage of votes of the green party in the "Landtagswahlen" (elections on state level) as an indicator. We also collected data on district level for unemployment rates and district sizes. The unemployment rate is an indicator for the district's economic well being. The exchange systems of the Great Depression in the 1930s as well as Michael Linton's first exchange system emerged out of economic recessions accompanied by high unemployment. We expect that the economic situation of a district will influence the founding rate of exchange systems either (Hoeben 2003; Meier 2001; Pacione 1998). The annual district size should indicate whether the district is an urban or rural region. As the flow of information is better in tightly packed areas urban regions should support the process of diffusion. Additionally the negative consequences of increasing anonymization in big cities may promote the formation of exchange schemes as these systems aim to realm the community and to strengthen the local economy (Hoeben 2003; Pacione 1997; 1998).

The time of observation analyzing the formation process of the systems is 1988 to 2005 for West Germany. Due to local area reforms in East Germany relevant data on district specific level were not available until 1995. Thus we determined the time of analysis for East German exchange schemes for the period 1995 to 2005. For analyzing the formation of the German exchange systems we use event history methods as these models provide a natural framework for studying diffusion processes, i.e. cumulative diffusion of innovations or various processes of social contagion (Diekmann/Mitter 1990, p. 429f; Diekmann/Mitter 1993, p. 38f; Strang 1991; Strang/Soule 1998; p. 283). In our analysis we focus on the point of time when the first local exchange system was founded in a district and examine how the timing of this event was related to the district specific covariates, the founding rates in neighboring districts, the media

⁷ We investigated in the archives of the following newspapers: Der Spiegel, Die Welt, Die Zeit, Fokus, Stern, SZ (Süddeutsche Zeitung), TAZ (Die Tageszeitung)

coverage and the population density. Our events are recorded on an annual basis only – we are confronted with discrete durations. Thus we use a discrete-time event history approach and estimate a duration model for grouped data following the approach of Prentice and Gloeckler (Allison 1982, p. 70ff; Prentice/Gloeckler 1978). This is a semi-parametric model where the discrete hazard time for a district i to change the status in time interval j – i.e. to found a local exchange system – is given by the following function:

$$h_j(X_{ij}) = 1 - \exp[-\exp(X_{ij}\beta + \gamma_j)]$$

We have a fully nonparametric baseline hazard with a separate parameter γ_i for each duration interval. If we define an indicator variable y_{it} being 1 if an adoption took place, i.e. an exchange system has been formed in a district during the interval $[t - 1, t)$ and otherwise is 0, then the log likelihood can be defined as (Jenkins 1997, p. 110f):

$$\log L = \sum_{i=1}^n \sum_{j=1}^{t_i} \{y_{ij} \log h_j(X_{ij}) + (1 - y_{ij}) \log [1 - h_j(X_{ij})]\}$$

For calculating our models we first have to reorganize our dataset and change our units from districts to “district-years”. Each district contributes as many observations as the number of years it was at risk. Our observations for a given district are cut off once an exchange scheme is formed in the district. This leads to an unbalanced panel data set having a varying number of observations across districts (Allison 1982; Ashworth/Geys/Heyndels 2006; Berry/Berry 1992, p. 724; Jenkins 1997; p. 112). The 327 West German districts contributed to a total of 4,718 district-years (1 missing) for the observation period 1988 to 2005. For East Germany we have 1,071 observations (3 missings) for the period 1995 to 2005.

4. Results

The process of diffusion of the exchange systems in Germany has the typical s-shaped form characterizing most contagious processes. Figure 1 shows the cumulative hazard rates of the exchange systems’ diffusion in the entire state as well as a separate diagram for East and West Germany. This separate diagram indicates that in East Germany the diffusion process is timely delayed, retained and has not stopped yet. This lower rate of adoption may be partly explained in historical terms. To overcome the shortage of goods resulting out of the socialist system of the former GDR many citizens relied on informal exchange beyond the boundaries of the formal market. They have been socialized in self help and informal exchange in these times. They probably do not rely on an institutionalized form of exchange such as the exchange schemes.

Therefore our decision to estimate two different models for East- and West Germany with different durations is methodologically justified.⁸

Figure 1: Cumulative hazard rates for Germany and East and West Germany separately

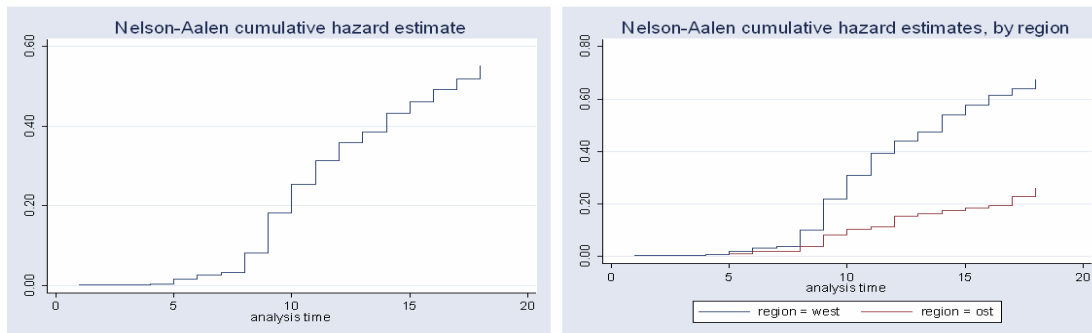
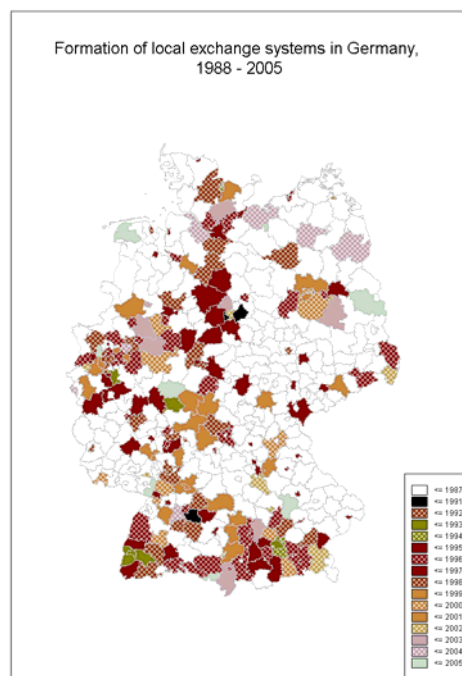


Figure 2 gives a cartographical picture of the contagion of German regions with exchange systems. Until 1992 there were only a few exchange systems predominantly in rural areas in the North and South-West of Germany. Since 1993 the movement expanded to further regions starting to concentrate on bigger cities. At the end of our observation in 2005 exchange systems existed in 43.3% of all German districts. Whereas almost half of the West German districts were infected with exchange systems when the survey took place, exchange systems were started in only one forth of the East German districts at this point of time.

Figure 2: Timing of exchange systems foundings in German districts, 1988 – 2005



Our first logit model in table 1 (West Germany) and table 2 (East Germany) relates the founding event of the first exchange system in a district to various district specific covariates. In this model we include our control

⁸ The first East German exchange system we got to know was founded in 1992 followed by 7 formations in 1995.

variables (*district size* and *unemployment rate*) and test our ideology-based founding assumption considering the percentage of votes of the green party at the last “*Landtagswahl*” (election on state level). In the second model we test the effects of social contagion considering the founding activity in neighboring districts (microlevel network). In the third model we examine how topic related reports in nationwide news media influence the founding rate of exchange systems and finally we add the population variables to test the assumptions of organizational ecology concerned with density dependent founding rates. For testing the ecological arguments we use two variables – the population size and the squared term of this variable. The likelihood ratio tests as well as changes in the coefficients in the models indicate unobserved individual heterogeneity (frailty). Thus for interpreting our results we draw back on the models incorporating the gamma mixture distribution (Jenkins 1997). The microlevel network variable and the media variable refer to the preceding year as contagious and influence processes are slightly delayed in time. The remaining covariates are added without this lag.

Table 1: Foundation of first local exchange system in West German districts

Variable	(1)	(2)	(3)	(4)
Constant	-13.220 (2.172)***	-13.126 (1.984)***	-12.212 (1.877)***	-10.945 (1.681)***
ln time	3.799 (1.079)***	3.639 (0.976)***	3.233 (0.911)***	3.245 (0.923)***
district size/thousand	0.003 (0.001)**	0.003 (0.001)*	0.003 (0.001)**	-0.002 (0.001)***
unemployment rate	0.025 (0.051)	0.045 (0.053)	0.030 (0.053)	-0.038 (0.029)
% green party	0.230 (0.047)***	0.238 (0.049)***	0.225 (0.047)***	0.073 (0.021)***
micro network lag		0.145 (0.092)	0.145 (0.090)	0.111 (0.042)**
Media lag			0.081 (0.037)**	0.065 (0.034)*
no. systems				0.017 (0.007)**
no. systems ²				-0.001 (0.000)***
Observations	4718	4718	4718	4718
log-likelihood	- 613.884	-612.347	-609.996	-582.930

(***) 1% significance, (**) 5% significance, (*) 10% significance; standard error in parenthesis

Regarding the diffusion process of the systems in West Germany our statistical analyses mainly support our theoretical assumptions. As claimed in our hypothesis, the ideological orientation of a district – measured by the percentage of votes for the green party – promotes the founding of a first exchange system in a district as the perceived risk is lower when the movement fits to the orientation of its endowment (model 1, 2, 3 and 4). Our data support our assumption about contagious processes caused by social/spatial proximity either. Proximity promotes the diffusion of the local exchange systems by encouraging imitative behavior. The probability of an exchange system being formed in a district is considerably influenced by the founding activities in neighboring districts. The coefficient has the expected positive sign in all relevant models (2, 3 and 4). We also find a significantly positive effect of media communication on the founding

rate of exchange systems (model 3 and 4). The more newspaper articles on the idea of local exchange systems were published in the preceding year the more exchange systems are formed. Finally our ecological hypothesis gets empirical support (model 4). As in many other ecological analyses a non-monotonic relationship is found in our estimations: the coefficient associated with the main term is positive (no. systems) while the squared term is negative (no. systems²). Thus the formation of exchange systems in West Germany is codetermined by the population density and the associated effects of legitimation and competition. Furthermore the effects of the control variables indicate the expected direction.

Table 2: Foundation of first local exchange system in East German districts

Variable	(1)	(2) ⁹	(3)	(4)
Constant	-3.358 (1.447)**	-3.675 (0.144)**	- 3.547 (1.514)**	-1.390 (2.017)
ln time	0.031 (0.294)	-0.157 (0.327)	-0.163 (0.325)	3.208 (1.593)**
district size/thousand	0.009 (0.002)***	0.008 (0.002)***	0.008 (0.002)***	0.007 (0.002)***
unemployment rate	-0.091 (0.062)	-0.070 (0.069)	-0.078 (0.073)	-0.061 (0.077)
% green party	0.074 (0.142)	0.118 (0.135)	0.107 (0.142)	0.178 (0.144)
micro network lag		0.069 (0.040)*	0.068 (0.040)*	0.064 (0.039)
media lag			0.035 (0.099)	0.009 (0.119)
no. systems				-0.301 (0.180)*
no. systems ²				0.001 (0.003)
Observations	1071	1071	1071	1071
log-likelihood	-110.138	-108.826	-108.765	-106.648

(***) 1% significance, (**) 5% significance, (*) 10% significance; standard error in parenthesis

Studying the diffusion process of exchange schemes in East Germany we get a completely different picture. In our analyses we find no significant effect of the district's ideological orientation on the founding of an exchange system in this district (model 1, 2, 3 and 4). However, the citizens' involvement with green party – measuring the ideological orientation in our analyses – is very low in East Germany. Therefore we should find another indicator reflecting the ideological orientation of an East German district fitting to the exchange schemes' framing for our further investigations. A suited indicator mirroring this ideological aspect could be church participation. After the break of the Berlin Wall and the collapse of the communist regime East Germany experienced a rapid rate of increase of church membership attracting primarily people with strong ideological interests. The coefficient of the microlevel network, however, has the expected positive effect on the founding of an exchange system in a district (model 2, 3 and 4) and the communication of the exchange systems by news media indicates the expected positive - but not significant – effect on diffusion either

⁹ simple cloglog model without gamma distribution due to problems with the ML estimation

(model 3 and 4). Our ecological assumption of density dependent founding rates again gets no empirical support. One possible explanation may be that the population of exchange systems has not reached its critical mass in East Germany yet. Increasing density may still increase legitimation and not sharpen competition yet. But if this explanation should work the sign of the main coefficient has to be the other way round. Thus this result remains disappointing. However, the cumulative hazard rate has already indicated that the process of diffusion of East German exchange systems has not the typical s-shaped curve. Besides the missing necessity for an institutionalized exchange system due to East German citizens' distinct self help capacities this unusual diffusion pattern may also be caused by a resistance and skepticism to equalizing systems¹⁰ as they have already experienced the breakdown of an equalizing system – the communist state – once. Regardless of various efforts to find explanations for the unexpected effects led many studies focusing on East Germany to unsatisfactory results contradicting the initial theoretical assumptions.¹¹

All in all, contagious processes play an important role for the diffusion of exchange systems in both parts of Germany and the news media have a German wide impact on the systems' founding rates either. Considering our ideology-based assumption and our ecological hypothesis we are confronted with contradicting results. Whereas the assumptions are verified by our data for the founding rates of West German exchange systems we have to reject these assumptions for the diffusion process of East German systems.

5. Discussion and Outlook

Our paper provides a theoretical and empirical analysis concerning the diffusion process of exchange systems in Germany. For our explanation we focused on network based theories. Our theoretical expectation that processes of mobilization are highly contagious was supported by the results from our empirical analyses. Furthermore we focus on the relevance of the news media for diffusing the idea of the exchange systems. Our empirical results suggest a positive influence of reports in news media on the systems' founding rates. One may see news media reports as the modern agitation formerly represented by political entrepreneurs/change agents (Olsen 1968; Rogers 1995). Often the first contact with a social movement is via reports in news media. Thus the personal communication in diffusing innovations sometimes loses

¹⁰ Especially the time-based currency

¹¹ For instance similar problems arose in a study concerned with business foundations in East Germany (Hinz 1998)

relevance (Andrews/Biggs 2006, p. 769). To provide a broad picture of the diffusion process of the exchange systems in Germany we additionally incorporate the ecological theory of density dependent formation. These assumptions are supported for the patterns of diffusion of West German exchange schemes and thus have at least partly empirical evidence.

Besides the process of social contagion and the density dependence of founding rates one however should not neglect the strong ideological approach of the exchange systems. Studies concerned with local exchange systems in English speaking countries even mentioned a strong bias of the membership profile towards a green-alternative ideology (Bebbington 2000; Caldwell 2000; Gran 1999). Our results support the importance of ideologies for the diffusion process either. Thus our paper combines traditional theories of research on diffusion with framing theories of the social movement research and tries to stimulate further research on the spreading of social movements.

However, due to this strong ideological approach of the exchange systems one should also focus on the role of political entrepreneurs for their growth. These political entrepreneurs are very enthusiastic about the movement's ideology and have a great interest in its spreading. With an almost religious commitment towards their mission they agitate for the movement's cause systematically – they travel around, visit various regions communicating and announcing the movement's ideology, ideas and concepts to promote its publicity and diffusion (Hedström/Sandell/Stern 2000, p. 147). Due to their charisma the entrepreneurs have an unusual ability to persuade and convince their audience and gain notable support. Encouraging a deep feeling of emotional connectedness they bind their fellows' attention, motivate them to join and may even cause social change (Günther 2003, p. 245; Hedström/Sandell/Stern 2002, p. 153; Weber 1976, p. 140ff). As a response to the charismatic leader's agitation again a process of mimicking behavior may be activated, i.e. members of the newly founded movement organization influence other individuals in their surroundings to establish another organization, who in turn have an impact on yet other actors (Hedström/Sandell/Stern 2000, p. 153). Additionally by traveling around the entrepreneurs carry information from one place to another and thus function as brokers (Burt 1990) creating a tie between otherwise distant regions. An information network spanning long geographic distances emerges as unintended by-product enabling imitation at great distances without direct observation taking place. Reports on the movement's reception and activities in other, distant regions give the individuals access to relevant information about the movement's success and consequences, i.e. events of districts traveled first directly influence the development of later visited regions

through these information links. Besides linking visited regions to one another this mesolevel network also reduces the distances of the districts lying between these places visited by the entrepreneur. Thus the traveling activity tends to speed up the process of diffusion of a social movement in a twofold way (Hedström/Sandell/Stern 2000, p. 153ff). We expect that political entrepreneurs play a decisive role in the diffusion of local exchange schemes either as their strong ideological component requires purposeful agitation for attracting members and gaining societal support. However, we can not draw back on quantitative data to test this assumption. Neither we have information concerned with the point of time the agitation took place nor about the travel routes of the political entrepreneurs allowing the creation of a mesolevel network mapping the visited districts. Nevertheless, we have some hints indicating the importance of agitation for the diffusion of the exchange systems. Not only the spreading of the concept in the English speaking countries was primarily promoted by the travel activity and presentations of the first system's founder Michael Linton but also the systems' diffusion in Germany was pushed by agitation. Many exchange systems in the North of Bavaria were initiated as a response to agitation as well as the Munich exchange system and the following systems in nearby regions.¹² Besides these local initiatives supra-regional activities promoting the systems' spreading take place either. These activities reach a broad audience and promote the system's diffusion beyond local boundaries. The annually held meeting of German exchange systems aims to link remote areas to one another and to support the popularity of the systems in Germany. Additionally there are manifold internet resources and data archives concerned with complementary economies and newsletters from other grassroots organizations focusing on similar topics calling attention to the exchange systems and trying to expand the systems' reach.

Yet, to evaluate the societal consequences and reach of the exchange systems movement it is also¹³ important to focus on conditions that foster and contribute to the sustainability of such movement organizations. Thus research is still needed to explain the movement's potential to endure. Under what conditions will a social movement organization flourish? What causes their growth and which factors contribute to their survival? This topic addresses issues concerned with processes of institutionalization as well as the population ecology approach. Is bigger better and older wiser? (Ranger-Moore 1997).

¹² information concerning the system's spreading in North Bavaria received from a conversation held on November 3rd, 2006 at the meeting of German speaking exchange systems in Wangen, information regarding the region of Munich: <http://www.lets-muenchen.de>

¹³ besides identifying conditions facilitating its mobilization and spreading

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